

CLAIMS

What Is Claimed Is:

1. ~~An improved transceiver system for sending and receiving infrared signals, comprising:~~

- ~~a circuit structure defined by a front side and a back side;~~
- ~~at least one infrared emitting device located on said front side;~~
- ~~at least one infrared detecting device also located on said front side; and~~
- ~~a transceiver circuit device located on said back side.~~

2. The system of Claim 1, wherein:

said infrared detecting device further comprises a front side and a back side, said infrared detecting device back side aligned to face said front side of said circuit structure; and

said infrared emitting device further comprises a back side, said infrared emitting device back side aligned to face said infrared detecting device front side, whereby said infrared emitting device and said infrared detection device form an integrated infrared emitting/infrared detection device.

3. The device of Claim 2, further comprising a primary lens element providing a single optical path, said primary lens element and said infrared emitting/infrared detection device stack cooperatively located such that said infrared emitting/infrared detection device stack is aligned with said single optical path.

4. The device of Claim 3, further comprising a secondary lens unit aligned along said single optical path.

~~5. The device of Claim 3, wherein said infrared emitting/infrared detection device is directly electrically connected to said transceiver circuit device.~~

6. The device of Claim 3, wherein said infrared emitting/infrared detection device stack comprises a single discrete device.

7. The device of Claim 3, further comprising a housing encapsulating said circuit structure, and said transceiver, said circuit structure, and said infrared emitting/infrared detection device stack.

8. The device of Claim 3, wherein said infrared emitting/infrared detection device comprises at least two infrared emitting devices and a single infrared detection device.

9. The device of Claim 1, wherein said transceiver circuit device is in direct electrical contact with said circuit structure back side.

10. The device of Claim 9, wherein said electrical contact is provided by connection means for electrically connecting said transceiver circuit device to said circuit structure back side.

11. The device of Claim 9, wherein said infrared emitting device and said infrared detection device are in direct electrical contact with said circuit structure front side.

12. An improved transceiver system for sending and receiving infrared signals, comprising:

a circuit structure defined by a front side and a back side;

at least one infrared emitting device located on said front side;

at least one infrared detecting device also located on said front side; and

a transceiver circuit device located on said front side.

Sub B2/ 13. The system of Claim 12, wherein:

said infrared detecting device further comprises a front side and a back side, said infrared detecting device back side aligned to face said front side of said circuit structure; and

said infrared emitting device further comprises a back side, said infrared emitting device back side aligned to face said infrared detecting device front side, whereby said infrared emitting device and said infrared detection device form an integrated infrared emitting/infrared detection device.

14. The system of Claim 13, wherein:

said integrated infrared emitting/infrared detection device is located on said front side of said transceiver circuit device to form a transceiver/infrared emitting/infrared detection device stack.

15. The system of Claim 14, further comprising:

a primary lens element providing an optical path, said primary lens element and said transceiver/infrared emitting/infrared detection device stack cooperatively located such that said transceiver/infrared emitting/infrared detection device stack is aligned with said optical path.

16. The device of Claim 15, further comprising a secondary lens unit aligned along said single optical path.

17. The system of Claim 16, further comprising:

a housing encapsulating said transceiver/infrared emitting/infrared detection device stack.

~~18. An improved process for transmitting and receiving infrared signals from an~~
infrared transceiver assembly comprising a circuit structure defining a front side and a
back side, a transceiver circuit device, at least one infrared emitting device and at least
one infrared detection device, the steps comprising:

transmitting infrared signals by transmitting signals to said transceiver circuit device,
said transceiver circuit device being located on said back side,

passing said signals through said transceiver circuit device and to said circuit
structure;

passing said signals through said circuit structure to said front side and to said
infrared emitting device;

emitting infrared signals from said infrared emitting device;

receiving infrared signals by receiving infrared signals with said infrared detection
device;

passing said received signals to said front side;

passing said received signals through said circuit structure to said back side;

passing said received signals to said transceiver circuit device; and

~~passing said received signals away from said transceiver circuit device.~~

19. An improved process for transmitting and receiving infrared signals from an
infrared transceiver assembly comprising a circuit structure defining a front side and a
back side, a transceiver circuit device, at least one infrared emitting device and at least
one infrared detection device, the steps comprising:

transmitting infrared signals by transmitting signals to said transceiver circuit device,
said transceiver circuit device being located on said front side,

passing said signals through said transceiver circuit device and to said infrared emitting device;

emitting infrared signals from said infrared emitting device;

receiving infrared signals by receiving infrared signals with said infrared detection device, said infrared emitting device being stacked upon said infrared detection device to form an integrated infrared emitting/detection device stack;

passing said received signals to said transceiver circuit device; and

passing said received signals away from said transceiver circuit device.

20. The process of Claim 19, wherein:

said first passing comprises passing said signals to said infrared emitting device where said infrared emitting device is substantially in physical contact with said transceiver circuit device to form an integrated transceiver/infrared emitting/detection device stack; and

said second passing comprises passing said received signals to said transceiver circuit device where said infrared detection device is substantially in physical contact with said transceiver circuit device to form an integrated transceiver/infrared emitting/detection device stack.